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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/049,252	06/03/2002	Heinrich Schenk	12816-044US1	8421
7590	06/29/2006		EXAMINER MERED, HABTE	
Fish & Richardson 225 Franklin Street Boston, MA 02110-2804			ART UNIT 2616	PAPER NUMBER

DATE MAILED: 06/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/049,252

Applicant(s)

HEINRICH SCHENK

Examiner

Habte Mered

Art Unit

2616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 03 June 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 11-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 June 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                                    |

### DETAILED ACTION

1. The preliminary amendment filed on 06/03/2002 has been entered.
2. Claims 1-10 are cancelled.
3. Claims 11-19 are pending.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 11-19** are rejected under 35 U.S.C. 103(a) as being unpatentable over Golden (US 5, 163, 044) in view of Foley (US Pub. No. 2001/0012319).

*Golden teaches a full-duplex modem that has fractionally spaced equalizers and echo cancellers.*

6. Regarding **claim 11**, Golden teaches a method for receiving a received signal transmitted via a duplex transmission system (**See Figure 1 and Column 2:63-33**), the method comprising: receiving the received signal from a duplex transmission unit in the duplex transmission system (**Figure 1, elements 100 and 300**); sampling the received signal (**Column 4:30-35**); generating an echo compensation signal in an echo compensation device on the basis of a transmitted signal from the duplex transmission unit (**Column 5:20-24 and Figure 2, element 145**); combining the echo compensation signal with the sampled received signal to obtain an echo-compensated received signal (**Figure**

**2, element 24,  $rs_1(t)$  and Column 5:23-30**); equalizing the echo-compensated received signal (**Column 5:50-52 and Figure 2, element 160**); and outputting the echo-compensated received signal for further processing (**Figure 2, element 30**); the equalized received signal is sampled again at once the symbol rate and is supplied to the echo compensation device (**Column 7:29-33**) .

Golden fails to disclose sampling the received signal at twice a symbol rate of the received signal.

*Foley teaches ADSL/hub modem.*

Foley discloses sampling the received signal at twice a symbol rate of the received signal. (**See Paragraph 65**)

7. Regarding **claim 14**, Golden discloses a receiver arrangement for a duplex transmission unit (**See Figure 1 and Column 2:63-33**), the receiver arrangement comprising: a first sampling device for sampling a received signal from the duplex transmission unit (**Figures 2,3, and 4 element 135 and see also Column 4:26-32 and Column 6:1-10**); an echo compensator device (**Figure 2, elements 140 and 145; Figure 3, elements 570 and 540**) for producing an echo compensation signal on the basis of a transmitted signal from the duplex transmission unit, with the echo compensation signal being combined in the echo compensation device with the received signal sampled by the sampling device to obtain an echo-compensated received signal(**Figure 2, element 24,  $rs_1(t)$ ; Figure 3, element 56  $co(t)$ ; Figure 4, element 640,  $rs_2(t)$  and Column 5:23-30**); and a first equalizer for equalizing the echo-

compensated received signal (**Figure 4, element 650**) and for outputting the equalized and echo-compensated received signal for further processing; wherein the first sampling device (**Figure 4, element 135**) and the echo compensation device include a second equalizer (**Figure 4, element 671**) arranged between the first sampling device and the echo cancellation device; and wherein a second sampling device (**Figure 4, element 642**) is provided to sample the received signal equalized by the second equalizer at once the symbol rate and to supply it to the echo compensation device. (**See also Column 9:1-54**)

Golden fails to disclose sampling the received signal at twice a symbol rate of the received signal.

Foley discloses sampling the received signal at twice a symbol rate of the received signal. (**See Paragraph 65**)

8. Regarding **claim 12**, Golden discloses the received signal is equalized using non-recursive filter. (**See Figure 2-4 – Hilbert filter is non-recursive filter. See also Column 5:34-40**)

Golden fails to disclose sampling the received signal at twice a symbol rate of the received signal.

Foley discloses sampling the received signal at twice a symbol rate of the received signal. (**See Paragraph 65**)

9. With respect to **claims 11, 12, and 14**, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Golden's

apparatus to incorporate sampling the received signal at twice a symbol rate of the received signal. The motivation being sampling the received signal at twice a symbol rate of the received signal aids in some implementations to easily separate incoming data into quadrature and in-phase streams as detailed in Foley's paragraph 65.

10. Regarding **claim 13**, Golden discloses a method, wherein the non-recursive digital filter has a set of coefficients unaltered during data transmission. **(See Column 5:55-67 and Column 6:20-35)**

11. Regarding **claim 15**, Golden discloses a receiver arrangement wherein the second equalizer includes a digital filter. **(See Figure 4, element 671 – FIR by definition is a non-recursive digital filter)**

12. Regarding **claim 16**, Golden discloses a receiver arrangement, wherein the second equalizer includes a non-recursive digital filter. **(See Figure 4, element 671 – FIR by definition is a non-recursive digital filter)**

13. Regarding **claim 17**, Golden discloses a receiver arrangement, wherein a set of coefficients of the second equalizer is set permanently. **(See Column 5:55-67 and Column 6:20-35)**

14. Regarding **claim 18**, Golden discloses a receiver arrangement, wherein the received signal is supplied to the first sampling device via a reception filter (**Figure 4, element 130**), the received signal being sampled at once the symbol rate (**Column 7:29-33**) by the second sampling device and being equalized by the second equalizer

**(Figure 4, element 671)**, the received signal being supplied to the echo compensation device via a digital high-pass filter. **(Figure 4, element 130)**

15. Regarding **claim 19**, Golden discloses a receiver arrangement wherein the first equalizer includes digital non-recursive filter with adaptively settable filter coefficients, the first equalizer having a decision feedback equalizer connected in series with, the decision feedback equalizer being configured to output the equalized and echo compensated received signal for further processing. **(This is true with all embodiments described in Figures 2, 3 and 4. Hilbert Filter is a non-recursive digital filter and constitutes the first equalizer and its output is in series with elements stated in this limitation. For further clarification see Column 5:45-67, Column 6:15-30, and Column 9:22-30)**

### ***Conclusion***


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Habte Mered whose telephone number is 571 272 6046. The examiner can normally be reached on Monday to Friday 9:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on 571 272 3088. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For

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more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HM  
6-25-2006



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